

Title: Building Nursing Research Scientist Capacity: Mentoring the Next Generation

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In 2013, enrollment in PhD programs in nursing peaked at 5,122 students and then in 2017, declined 9.6% to 4,632 (<https://www.aacnnursing.org/Policy-Advocacy/PhD-Pipeline>). A wave of faculty retirements is expected across the U.S. over the next decade and PhD programs are not producing enough graduates to fill the projected vacant positions (<https://www.aacnnursing.org/News-Information/Fact-Sheets/Nursing-Faculty-Shortage>).

Consequently, it is critical that nurse scientists mentor the next generation of PhD-prepared nursing faculty, from their student recruitment into doctoral programs to conferral of the degree.

Mentoring is a dynamic, collaborative, reciprocal relationship focused on the student's personal and professional development. Mentoring methods provided in the table below support degree attainment, while eliminating "hazing" (e.g., disparage, denigrate, belittle, exploit, malign, etc.) through expectation transparency (Lovitts, 2007). Based on our collective experiences, these practical tips for mentoring PhD students, from recruitment/enrollment to graduation, facilitated degree attainment and helped to ignite and sustain a passion for nursing research.

Table Mentor activities, actions, and tasks that support PhD students

Activity	Mentor Actions and Tasks
Recruitment and enrollment	<ul style="list-style-type: none"> ▪ In-person meeting to discuss student interests and academic program expectations ▪ Assess proposed applicant program of research “fit” with mentor and available resources ▪ Support document completion (i.e., application, references, financial aid) ▪ Monthly communication: application to program start
Respect and accountability	<ul style="list-style-type: none"> ▪ Involve student in all decisions that affect them ▪ Allow students to make mistakes and learn from them ▪ Recognize student’s potential ▪ Critique, but do not be critical, denigrate, or disparaging ▪ Provide critique but do not do their work ▪ Provide reasonable and mutually agreed upon timelines, meeting the needs of both student and mentor ▪ Hold student accountable for deadlines ▪ Respect the intellectual property of the student (and others) ▪ Talk to and with the student rather than talking to others about the student
Mentor/student relationship building	<ul style="list-style-type: none"> ▪ Value the student as a person and demonstrate that value through words and actions ▪ Build trust and rapport

	<ul style="list-style-type: none"> ▪ Believe in the student and let the student know. Build self-confidence. ▪ Motivate the student with verbal and written statements often ▪ Celebrate accomplishments and successes (big and small) ▪ Counsel as needed
Scientific relationship building	<ul style="list-style-type: none"> ▪ Assist with networking with other scientists to build network/research team ▪ Augment gaps in knowledge and skills by engaging other faculty (internal/external) ▪ Provide introductions to faculty with shared interests at conferences or via email
Student networks	<ul style="list-style-type: none"> ▪ Encourage active participation ▪ Encourage attending meetings/conferences ▪ Encourage leadership opportunities in later part of program
Professional organizations	<ul style="list-style-type: none"> ▪ Assist with identifying a realistic/affordable number of organizations to join ▪ Introduce student to other scientists at meetings/conferences ▪ Identify leadership opportunities that fit student trajectory ▪ Assist with identification of funding for membership/conference travel
Role modeling	<ul style="list-style-type: none"> ▪ Be a role model of the behaviors of a nurse scientist (collaborative, consultative, team player, time management, productive, leader, scholarly, accomplished, etc.) with high integrity ▪ Role model application of research techniques, interdisciplinary collaboration, and resiliency

Communication	<ul style="list-style-type: none"> ▪ Agree on preferred method(s) (email, text, face-to-face) ▪ Communicate in a clear, timely, articulate manner to assure understandable ▪ Regularly scheduled face-to-face meetings (minimum monthly)
Program success	<ul style="list-style-type: none"> ▪ Guide student's plan for program, by year and by semester ▪ Monitor progression through courses and provide feedback/support ▪ Suggest study groups or university resources when needed
Graduate Assistantship	<ul style="list-style-type: none"> ▪ Notify of opportunities and assist with applications ▪ Appoint to mentors research team to develop knowledge and skills ▪ Allow to be full member of research team ▪ Identify research skills needing development each semester and co-design a plan to assure growth and development
Writing	<ul style="list-style-type: none"> ▪ Encourage students to adapt student assignments for publication when appropriate ▪ Review written materials in timely manner (<2 weeks) ▪ Critique and provide explicit, understandable, purposeful, and useful feedback on any/all written materials ▪ Assist with use of editor as needed ▪ Consider inviting student to co-review journal manuscripts as a way to learn writing

Abstracts	<ul style="list-style-type: none"> ▪ Require a submission of two abstracts annually to scholarly conferences and encourage more ▪ Guide identification of where to submit abstracts ▪ Co-author abstracts
Manuscripts	<ul style="list-style-type: none"> ▪ Co-design publication plan: theoretical, review, and two results papers ▪ Encourage a minimum of a submitted/published manuscript each year ▪ Ask student to be a co-author on manuscript from mentor's research ▪ Provide dataset from mentor's research to prepare student manuscript ▪ Guide identification of journals that "fit" topic of manuscript and assure strict attention to journal guidelines upon submission ▪ Clarify expectations, role of and management of co-authors ▪ Provide opportunity to conduct peer review of journal articles ▪ Co-author manuscript with specific guidance on: <ul style="list-style-type: none"> ○ Table/figure development ○ Result reporting ○ Discussion and conclusion statements (align with findings & prohibit overstatement) ▪ Assist with submission of final manuscript ▪ Guide examination of journal peer reviewer feedback, revisions, and resubmission ▪ Celebrate acceptance of and date of publication

<p>Grantsmanship (relevant for some students)</p>	<ul style="list-style-type: none"> ▪ Assist with identifying grant opportunities for doctoral students such as NRSAs, dissertation grants from MNRS, and specialty societies ▪ Promote attendance at grant writing seminars/training ▪ Require submission of internal and external (NRSA or NRSA like criteria) application ▪ Guide each component of the grant application <ul style="list-style-type: none"> ○ Refinement of specific aims, research design selection, and development of budget ○ Identification of co-investigators (if appropriate) ○ Completion of forms (i.e., bio-sketch, dissemination plan) ○ Identification of internal/external reviewers prior to submission ▪ Critique application, providing understandable/useful feedback
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	<ul style="list-style-type: none"> ▪ Guide organization of grant reviewer feedback and writing response to reviews ▪ Oversee Reviewers' letter (if needed) ▪ Guide the resubmission process and revisions ▪ Guide grant implementation when funded: <ul style="list-style-type: none"> ○ Data collection and management ○ Procedure development and enactment ○ Budget management ○ Statistical analysis ○ Table/figure development ○ Result reporting ○ Discussion and conclusion statements (align with findings & prohibit overstatement) ▪ Guide preparation of final reports ▪ Encourage and require dissemination of grant findings (may be after graduation)
Dissertation success	<ul style="list-style-type: none"> ▪ Encourage to read published dissertations, attend defenses of other PhD students, and confer with graduates about the dissertation process ▪ Select and agree upon a doable dissertation topic ▪ Co-design a timeline for each step in the dissertation process and set deadlines (adjust as needed) attending to school and graduate college timeframes

	<ul style="list-style-type: none"> ▪ Guide refinement of dissertation specific aims after a suitable/realistic topic has been determined. ▪ Guide writing of chapters for plan and prepare for plan defense ▪ Help student maintain a clear focus on research objectives ▪ Guide research design selection and problem solve issues with research design as needed ▪ Guide IRB application and approval process ▪ Assure all HIPPA and human subjects ethical considerations are adhered to ▪ Brainstorm solutions to problems concerning the research project ▪ Co-select expected date for defense ▪ Guide writing of dissertation and prepare for defense
Mentor Students (relevant for some students)	<ul style="list-style-type: none"> ▪ Require mentoring of new PhD, Masters, and/or Undergraduates ▪ Discuss appropriate mentorship for the level of student ▪ Include mentor roles and responsibilities in meetings
Awards	<ul style="list-style-type: none"> ▪ Assist with identification of eligible awards ▪ Write letters of recommendation
Fellowships	<ul style="list-style-type: none"> ▪ Assist with identification of fellowships, if desired ▪ Guide application development and submission

Letters of support and recommendation	<ul style="list-style-type: none"> ▪ Provide detailed and specific letter(s) that are tailored to submission location ▪ Provide letter in a timely manner ▪ Provide letters for post-doc and/or university position, grants, fellowships, and/or awards
Employment	<ul style="list-style-type: none"> ▪ Assist with identification of where to apply to assure a personal and professional fit ▪ Assist with interview preparation (role play) ▪ Critique application documents (written) and presentation (verbal) ▪ Assist with sorting out offers to assure a personal and professional fit

These tips may not apply to all university settings or students. Nonetheless, from our collective experiences, we have found these activities build resilience, ignited a passion for nursing research, and supported conferral of PhD degrees among those who we have mentored.

Resources

American Association of Colleges of Nursing Information on PhD Pipeline of Students.

<https://www.aacnnursing.org/Policy-Advocacy/PhD-Pipeline>

American Association of Colleges of Nursing. Fact Sheet on Faculty Shortages.

<https://www.aacnnursing.org/News-Information/Fact-Sheets/Nursing-Faculty-Shortage>

Chen, Y., Watson, R., & Hilton, A. (2016). A review of mentorship measurement tools.

Nursing Education Today, 40, 20-28.

Conn, V. S. (2005). Editorial: Postdoctoral research preparation. *Western Journal of Nursing Research*, 27(7), 799-801.

Conn, V. S. (2013). Lightening the load: Leadership strategies for enhancing faculty research productivity. *Western Journal of Nursing Research*, 35(2), 151-154.

Conn, V. S. (2014). Prepare to launch: Optimizing doctoral education to ensure career success. *Western Journal of Nursing Research*, 36(1), 3-5.

Conn, V. S. (2017). Requiring authorship competence among PhD students. *Western Journal of Nursing Research*, 39(3), 327-328.

Conn, V. S., Jefferson, U., Cohen, M., Anderson, C. M., Killion, C. M., Fahrenwald, N. L., ... Loya, J. (2015). Strategies to build authorship competence among PhD students. *Western Journal of Nursing Research*, 39(3), 329-355.

Conn, V. S., Ward, S., Herrick, L., Topp, R., Alexander, G. L., Anderson, C. M., ... Georgesen, S. (2015). Managing opportunities and challenges of co-authorship. *Western Journal of Nursing Research*, 37(2), 134-163.

Conn, V. S., Zerwic, J., Rawl, S., Wyman, J. F., Larson, J. L., Anderson, C. M., ... Markis, N. E. (2014). Strategies for a successful PhD program: Words of wisdom from the WNJR editorial board. *Western Journal of Nursing Research*, 36(1), 6-30.

Graves, J. M., Postma, J., Katz, J. R., Kehoe, L., Swalling, E., & Barbosa-Leiker, C. (2018). A national survey examining manuscript dissertation formats among nursing PhD programs in the United States. *Journal of Nursing Scholarship*, 50(3), 314-323.

Lewinski, A. A., Mann, T., Flores, D., Vance, A., Bettger, J. P., & Hirschey, R. (2017). Partnership for development: A peer mentorship model for PhD students. *Journal of Professional Nursing*, 33(5), 363-369.

Lor, M., Oyesanya, T., Chen, C. X., Cherwin, C., & Moon, C. (2018). Postdoctoral opportunities for nursing PhD graduates: A resource guide. *Western Journal of Nursing Research*, 1-18.

Lovitts, B. E. (2007). *Making the implicit explicit: Creating performance expectations for the dissertation*. Sterling, VA: Stylish Publishing, LLC.

Nehls, N., Barber, G., & Rice, E. (2016). Pathways to the PhD in nursing: An analysis of similarities and differences. *Journal of Professional Nursing*, 32(3), 163-172.

Nowell, L., White, D. E., Mrklas, K., & Norris, J. M. (2015). Mentorship in nursing academia: a systematic review protocol. *Systematic Reviews*, 4.

Rawl, S. M. (2014). Writing a competitive individual National Research Service Award (F31) application. *Western Journal of Nursing Research*, 36(1), 31-46.

Rawl, S., & Lusk, S. L. (2011). The Midwest Nursing Research Society advances the scientific basis of nursing practice and promotes development of nurse scientists. *Western Journal of Nursing Research*, 32(7), 984-988.

Singh, M. D., Pilkington, F. B., & Patrick, L. (2014). Empowerment and mentoring in nursing academia. *International Journal of Nursing Education Scholarship*, 11(1), 101-111.

Xu, J., Kim, K., Kurtz, M., & Nolan, M. T. (2016). Mentored peer reviewing for PhD faculty and students. *Nurse Education Today*, 37, 1-2.